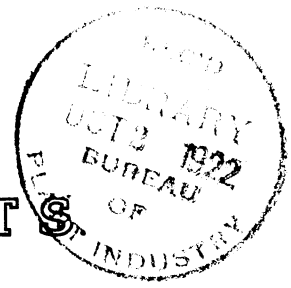


PLANT IMMIGRANTS.

No. 195. JULY, 1922.

GENERA REPRESENTED IN THIS NUMBER.

Plates:

Foreign Seed and Plant Introduction.

EXPLANATORY NOTE

This circular is made up principally of notes received from agricultural explorers, foreign collaborators, and correspondents, concerning the more important plants which have been received recently by the Office of Foreign Seed and Plant Introduction. It also contains reports on the behavior of plants which have been introduced in previous years.

Descriptions appearing here are revised and later published in the Inventory of Seeds and Plants Imported,--the permanent record of plant introductions made by this Office.

Plant Immigrants should be considered merely an ANNOUNCEMENT OF THE ARRIVAL OF PLANT MATERIAL. As a rule all material is propagated before being distributed; this may require several years.

The Annual Catalogue of New Plant Introductions describes briefly the plants available for distribution. Applications for seeds or plants listed in Plant Immigrants may be sent at any time, however, and will be filed in the order of their receipt. When material is ready for distribution, these requests will be given first attention; if their number is sufficient to exhaust the available supply of a given species, it will not be included in the Annual Catalogue.

Plant breeders and experimenters who desire plants not available in this country are invited to correspond with this Office which will endeavor to secure the required material through its agricultural explorers, foreign collaborators, or correspondents.

DAVID FAIRCHILD
Agricultural Explorer in Charge,
Office of Foreign Seed and Plant Introduction.

Issued Sept. 25, 1922. Washington, D. C.

Allium odorum (Liliaceae), 55442. From Foochow, China. Seeds presented by C. R. Kellogg. This onion is cultivated in Japan for its leaves which are eaten as greens. In the spring the leaves, which attain a length of one foot, are borne luxuriantly by the old bulbs. (Adapted from Useful Plants of Japan, Agricultural Society, Tokyo, p. 17.)

Amaranthus viridis (Amaranthaceae), 55405. From Antigua, Leeward Islands. Seeds presented by Edwin A. Thompson, junior assistant, Imperial Department of Agriculture. "I obtained this variety recently in Montserrat; the seeds were from locally grown plants of a special type of West Indian spinach, which is an undoubted acquisition. The plant becomes about 5 feet in height, and during its early growth the leaves are large - about the size of a dessert plate. During the recent extreme drought in Antigua I have been able to have a side dish of this vegetable at least twice a week." (Thompson.)

Amerimnon sissoo (Fabaceae), 55411. **Sissu**. From Dehra Dun, United Provinces, India. Seeds presented by R.S. Hole, forest botanist. A large deciduous tree native to tropical and subtropical regions of the lower Himalayas. It is highly esteemed for its very durable wood, which seasons well, does not warp or split, and is strong and elastic. The thin layer of sapwood is white; the heartwood is brown with darker longitudinal veins, and very hard. (Adapted from Gamble, Manual of Indian Timbers, p. 124.)

Casimiroa tetrameria (Rutaceae), 55445. **Matasano**. From Tegucigalpa, Honduras. Seeds presented by G.K. Donald, American consul. A Central American tree about 30 feet in height, with pale, warty branches, digitate leaves about 8 inches long, and axillary panicles of greenish flowers. The edible fruit, approximately the size of an orange, has a green skin with spiny protuberances sparsely scattered over the surface; the white or yellow flesh is sweet or slightly sour, and incloses two or three large black seeds. (Adapted from Field Museum of Natural History, Chicago, Publications, Botanical Series, vol. 1, p. 401.)

"This species is closely similar to the true white sapote, *Casimiroa edulis*, both in character of foliage and fruit. Probably a few of the trees in California which have usually been considered to belong to *C. edulis*

should be referred to *C. tetrameria*. The latter may be planted in regions where the former succeeds, i. e., in California and Florida." (Wilson Popenoe.)

Cassia sp. (Caesalpiniaceae), 55049. From Szemao, Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the Bureau of Plant Industry. "(No. 2827. Szemao, Yunnan. March 11, 1922.) A deciduous tree 40 to 50 feet in height, found in the foothills of Szemao at an altitude of 5,000 feet. During March the tree is one mass of large, deep-pink flowers which are 2 inches across and borne in short racemes all along the branches. It is a most striking tree and can be seen from quite a distance. It is very different from *Cassia nodosa* which is evergreen, and from *C. bakeriana* which occurs in northern Siam." (Rock.)

Ceratonia siliqua (Caesalpiniaceae), 54977 and 54978. **Carob**. From Valencia, Spain. Pods presented by J. D. Wright. Quoted notes by Mr. Wright. "Carob pods obtained from 'Masia de Mompo' the estate of Sr. Pelegrin Contell, near Valencia, Spain, March 29, 1922."

54977. "'Matalafera.' Pods of this quality are borne by Sr. Contell's best trees, including his big tree 'El Capitan.'"

This is the variety most extensively cultivated in this region and is very generally used for grafting nursery seedlings and in forming new plantations. The tree is of medium size, with smooth and straight branches, the ramifications of which are thrown out almost at right angles. The leaves are comparatively large and very dark green, and the pods, of a deep chestnut shade bordering on black, are large and wide and attain 8 inches in length. Although of excellent appearance, they are not considered as good as the red varieties, being lighter in weight and possessing less pulp. The crop of this variety, however, is the most constant and abundant of all carobs known to Valencia agriculturists. (Adapted from note by Robert Fraser, American Consul, under S.P.I. No. 30914.)

54978. "'Roches.' The pods of this variety are very sweet, but are not borne as abundantly as are those of the 'Matalafera.'"

Ceratonia siliqua (Caesalpiniaceae), 55448-55450. **Carob**. From Jerusalem, Palestine. Cuttings presented by I. Wilkanski, Jewish Agricultural Experiment Station. Quoted notes by Mr. Wilkanski.

55448. "'Habathi.' This is poorer in quality than the other two varieties (S.P.I. Nos.55449 and 55450), but gives a larger crop."

55449. "'Sandalawi.' This is the best variety as far as quality is concerned."

55450. "'Schehabi.' This is quite mediocre both in quality and yield."

Cucurbita pepo (Cucurbitaceae), 55367. **Squash.** From Paris, France. Seeds presented by Vilmorin-Andrieux & Co. The "Naples squash" has trailing stems usually about 10 feet long, and dull-green leaves with grayish white veins and spots. The cylindrical fruit is up to 2 feet in length, with smooth dark-green skin which becomes yellow when the fruit is ripe. The orange-colored flesh is abundant and sweet. This variety is very productive and the fruit is of excellent quality, keeps well, but ripens rather late. (Adapted from Robinson, The Vegetable Garden, p. 326.)

Cucurbita pepo (Cucurbitaceae), 55463. **Squash.** From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. "Courge de Mirepoix" (Mirepoix Musk squash). A variety cultivated in southern France, with a strong trailing stem, large erect leaves with rounded lobes, and pear-shaped, slightly ribbed fruits which are dark green streaked with light green. The flesh is dark red, firm, and fragrant. (Adapted from Robinson, The Vegetable Garden, p. 327.)

Dioscorea esculenta (Dioscoreaceae), 54975. **Lesser yam.** From Mayaguez, Porto Rico. Tubers presented by T. B. McClelland, horticulturist, Porto Rico Agricultural Experiment Station. "Potato." A small-tubered variety from Africa, resembling the Irish potato and known in Porto Rico as the "potato" yam. In some places it is considered among the best for home planting, and in a few city markets it brings good prices.

The vines of this variety are slender, and round stemmed, with short, strong, sharp spines; there are two longer spines at the base of each leaf petiole. The leaves appear alternately. The edible tubers develop near the crown of the plant much the same as sweet potatoes. They are oval and up to 8 inches in length and 2½ inches in diameter. As they are small and not easily injured, these roots can usually be kept longer after being harvested than the larger rooted kinds. They are smooth, dark grayish brown, and

at a distance of a few feet are likely to be mistaken for the Irish potato. The skin is very thin and tough, and may, after being broken, be pulled off in strips resembling thin pieces of cherry bark. The interior of the tuber is white, brittle, and firm, and practically free from fiber when not allowed to remain too long in the soil; it is over 23 per cent starch. However, tubers which are left in the soil until late in the winter sometimes have a few long and rather strong, longitudinal fibers. When cooked the tubers are fine grained, tender, and sweeter in flavor than most other varieties.

Since the small yams develop in the surface soil and are not hindered by a compact subsoil, the "potato" variety thrives best in rich soil, and better than most other varieties in clays. It yields poorly in sandy soil, and in compact soils produces angular or flattened tubers.

From experiments made in planting at different distances apart it is believed that 3 by 3 feet gives the best results. The variety grows well on level land where the drainage is good and the soil is loosened to a good depth, or on ridges. (Adapted from C. F. Kinman in Bulletin 27, Porto Rico Agricultural Experiment Station, p. 13.)

Fragaria sp. (Rosaceae), 54976. **Strawberry**. From Irapuato, Guanajuato, Mexico. Plants presented by Luis Kan, through Arthur Stockdale, Mexico City. "Irapuato is famous throughout Mexico for its strawberries, which supply the markets of Mexico City and many other towns of the highlands. Terry's 'Mexico' says: 'The rich soil of the environing country is favorable to the growth of strawberries (fresas) which are on sale throughout the year. A score or more of venders frequent the railway station and offer the berries in small baskets. The best berries are always carefully arranged on the top; the lower layers are apt to be small, if not decayed,' which shows that the Mexicans are not far behind their northern brethren in the matter of preparing their wares for sale. The elevation of Irapuato is 5,800 feet, the climate rather cool, subtropical. I have not been able to learn the history of the Irapuato strawberry fields; probably the first plants were brought here by the Spaniards in relatively recent times, and are of European derivation. Only one variety seems to be grown; this is a rather small berry of excellent flavor. It is introduced into the United

States for study by our strawberry breeders, and for possible use in producing new forms by crossing." (Wilson Popenoe.)

Jacaratia mexicana (Papayaceae), 55469. From Oxkutzcab, Yucatan, Mexico. Presented by Sr. Moises Vasquez Vega. A relative of the papaya (*Carica papaya* L.), introduced for breeding experiments.

"A tree with a smooth tapering trunk and many slender branches. The leaves are palmately 7-parted and the fruits, about 6 inches long, are 5-winged, each wing terminating in an incurved spur at the base. These sweetish edible fruits are preserved with sugar. The tree is commonly called 'bonete' or 'papaya silvestre,' and occurs in Yucatan and Chiapas, Mexico, and other parts of tropical America." (W. E. Safford.)

Juglans sp. (Juglandaceae), 55373 and 55374. **Walnut.** From Buenos Aires, Argentina. Seeds presented by D. S. Bullock, agricultural commissioner. Quoted notes by Mr. Bullock.

55373. "From the eastern foothills of the Andes at Limoncito, Rio Blanco, or Iruya, Province of Salta. Collected in August, 1921, A. G. Maddren."

55374. "From the Sierra de Lumbrera, a well-watered small mountain range just east of the Andes, in the department of Metan, Province of Salta. The 'Nogal' trees grow along the small creeks at an altitude of 3,000 to 4,000 feet. Collected by D. S. Birkett."

Lapageria rosea (Liliaceae), 55372. From Angol, Chile. Seeds presented by F. L. Crouse, Instituto Agricola Bunster. "This, the national flower of Chile, has been grown occasionally in northern greenhouses where it creates a genuine sensation when in bloom. It is a climbing plant of slow growth, with slender, wiry stems, and bright-crimson tubular flowers about 3 inches in length. In southern Chile huge bunches of these blossoms are brought to the railway stations and sold to passing travelers. The plant requires an acid soil." (Wilson Popenoe.)

Medicago sativa (Fabaceae), 55517 to 55519. **Alfalfa.** From Lima, Peru. Presented by Dr. W. E. Dunn, acting commercial attaché. Peruvian alfalfa has proved of great value in certain parts of the United States. In the hope of securing new strains which may be superior in certain respects to any now grown in the United

States,an effort is being made to obtain seed from as many different regions in Peru as possible. The following note is taken from H. L. Westover, Development of the Peruvian Alfalfa Industry in the United States, Department Circular 93:

"As compared with common alfalfa, both the Peruvian alfalfas are more upright,less branched,and have fewer and somewhat coarser stems and smaller crowns. In thick stands, these differences are hardly noticeable. Most of the Peruvian introductions are also characterized by rapid growth,by quick recovery after cutting, and, in sections having a mild climate, by ability to make growth in cool weather after ordinary alfalfas have ceased growing. Under such conditions the former starts growth earlier in the spring and continues later in the fall, thereby giving more cuttings each season. The principal objection advanced in times past to these alfalfas is their tendency to become somewhat woody when allowed to stand beyond the flowering stage,but this difficulty is easily obviated by harvesting earlier.

"Lack of hardiness will always confine the successful production of the true and smooth Peruvian alfalfas to the southern and southwestern portions of the United States, where the climatic conditions are comparatively mild. They can not be grown to advantage where the winter temperature falls below 10° F.

"At the present time most of the Peruvian and smooth Peruvian alfalfa in the United States is found in Arizona and California. It has also been grown to a limited extent in New Mexico, Texas,and the coastal regions of the southeastern states. The results secured seem to indicate that in much of this region the common alfalfa could be replaced very profitably by Peruvian alfalfa."

55517. "Monsefu Norte."

55518. "Quebrada de Tangas."

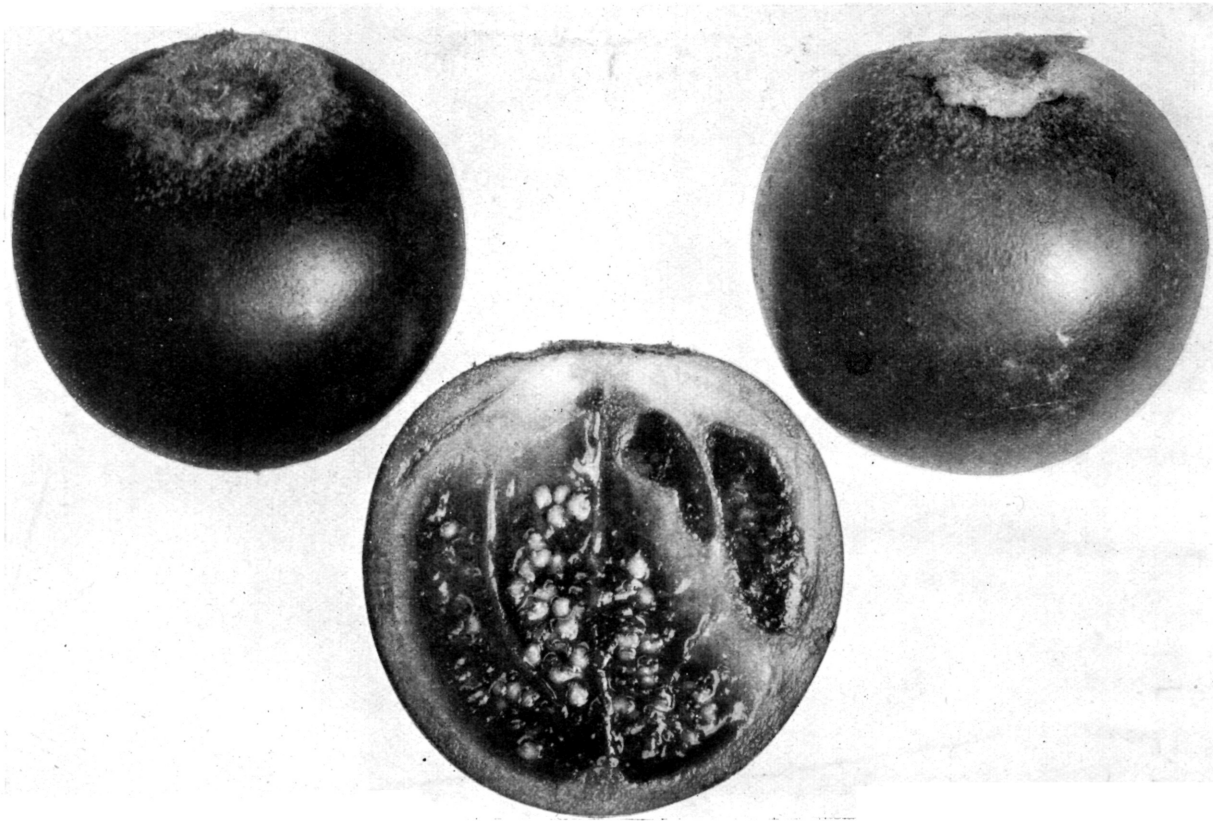
55519. "Sierra Alta."

Meibomia rensoni (Fabaceae), 55446. From San Salvador, Salvador. Seeds presented by Dr. don Carlos Renson,Director del Laboratorio Quimico. The "barajillo" is a rapidly growing shrub, native to the Republic of Salvador at altitudes ranging from 2,000 to 4,000 feet. Under favorable conditions it sometimes becomes a small tree about 18 feet high. The trifoliolate leaves are softly hairy and up to 3½ inches in length, and the small purplish flowers are borne in terminal ra-

A NARANJILLA PLANT GROWING IN AN ECUADORIAN GARDEN.

(*Solanum quitoense* Lam., S. P. I. No. 51394.)

In the highlands of Colombia and Ecuador, at altitudes between 3,000 and 8,000 feet, the naranjilla is cultivated in many gardens for its round, orange-colored fruits. It is a perennial, but only half woody in character, and it comes into bearing within a year after the seed is planted. It is not long lived. The huge leaves, which are purplish below, are decidedly attractive in appearance. The species can probably be grown in the southern United States, as well as in many subtropical portions of the globe. (Photographed by Wilson Popenoe, Banos, Tungurahua, Ecuador, March 11, 1921; P18467FS.)



FRUITS OF THE NARANJILLA.

(*Solanum quitoense* Lam., S. P. I. No. 51394.)

In general appearance this solanaceous fruit suggests an orange, whence the name "naranjilla" (little orange). When taken from the plant, its surface is covered with stiff, grayish bristles, but these are rubbed off before the fruit is carried to market. Within the thin, orange-colored skin is a mass of yellowish green translucent flesh containing numerous small seeds; the latter are strained out, and the juice and pulp are used to make refreshing drinks and ices, which have a flavor suggesting a combination of pineapple and lemon. In Colombia the native name of the fruit is "lulu"; the term "naranjilla" appears to be limited to Ecuador, where the plant is commercially cultivated in several regions. (Photographed, natural size, by Wilson Popenoe, Bogota, Colombia, September 20, 1920; P18089FS.)

cemes late in October. The roots of the "barajillo" are very large and penetrate deeply into the soil; the tubercles formed by the nitrogen-gathering bacteria are usually found only on the upper third of the root. All kinds of cattle are exceedingly fond of this plant; furthermore, it is capable of enduring prolonged drought and of thriving in very poor soil. (Adapted from Revista de Agricultura Tropical, El Salvador, vol. 1, p. 65.)

Melastoma repens (Melastomaceae), 55443. From Foochow, China. Seeds presented by C. R. Kellogg. "A low perennial shrub which bears beautiful roselike flowers all summer long. The flowers last only one day, but because of their great number the shrub is always well covered. The fruits are said to be eaten, but have the lack of flavor so common in Chinese fruits." (J. B. Norton.)

Microcitrus inodora (Rutaceae), 55447. **Russell River lime.** From Brisbane, Queensland. Seeds presented by C. T. White, Botanic Museum and Herbarium, Botanic Gardens. In general appearance the Russell River lime resembles the orange, having the same dark-green foliage. The very small white flowers are odorless, and the oval or oblong ribbed fruits are about 2½ inches long, with pulp having a sharp but agreeable flavor. This tree is native to the Bellenden-Ker region of North Queensland, and is the only species of the genus which yields fruits of sufficiently good quality to be of promise for culture even without any improvement by cross-breeding or selection. (Adapted from Swingle, Journal of the Washington Academy of Sciences, vol. 5, p. 577, and from Bailey, Report of the Government Expedition to Bellenden-Ker Range, p. 34.)

Phaseolus semierectus (Fabaceae), 55418. From Gatun, Canal Zone. Seeds presented by J. A. Close. "The long narrow pods are of a leguminous plant which I am trying out as a cover crop. I first noticed the dark-purple flowers, about the size and shape of sweet peas, along the railroad track at Gatun, but the plant did not grow well in the gravel. When planted in heavy clay mixed with charcoal, however, it developed wonderfully, and the vines formed a dense mat which allowed no other vegetation to grow under or through it. The plants grow about 3 feet high, and in the last month of the dry season the ground was covered with the decaying

leaves. New plants have appeared a hundred feet from the old planting." (Close.)

Prunus majestica (Amygdalaceae),55417. From Yunnan, China. Seeds collected by J. F. Rock, Agricultural Explorer of the Bureau of Plant Industry. "(No. 2884. Between Puerhfu and Mohei, Yunnan. March 18, 1922.) A tree 25 to 30 feet in height with ascending branches, growing on exposed dry ridges 6,000 feet or more in altitude. The cherries, which are borne in March, are oblong to ovoid, bright red, with scanty but juicy bitter flesh. The tree grows in company with *Pyrus yunnanensis*, *P. pashia*, *Larix* sp., and several other species of Prunus and Malus which are not now in flower." (Rock.)

Solanum tuberosum (Solanaceae), 55406. **Potato.** From Galicia, Austria. Tubers purchased from Messrs. Heinrich Dotkowski & Son. "'Petronius.' This variety is fairly vigorous in growth, and the plants are large, compact, and healthy with strong erect medium-green stems. The leaves are medium to large and rather dark green; the flowers are white, and pollen is produced rather freely. The tubers are light skinned, the eyes medium in number and depth. It is not a very productive variety, being chiefly valuable for breeding purposes." (William Stuart.)

Solanum tuberosum (Solanaceae),55456 to 55462. **Potato.** From Ibarra, Ecuador. Tubers presented by Sr. Jose Felix Tamayo. "These varieties of 'chaucha' potatoes were grown near Ibarra, Ecuador. The 'chauchas' (Quichua: early) are a group of potatoes cultivated in the Ecuadorian highlands at elevations between 8,000 and 12,000 feet. Commercially they are not very important due to the fact that they do not keep as well as other varieties, but they are much cultivated for home use. The tubers are of good size; those of some varieties are of good quality,while others are rather inferior. The color, both of surface and flesh, is variable.

"The 'chauchas' mature in about 5 months from the time of planting, when cultivated at an elevation of 12,000 feet: other varieties require 7 to 8 months. As soon as the plants come into bloom, the tubers are considered to be mature,and are dug for eating. Unlike other varieties,which must be dug and then stored for a period before resowing,the 'chauchas' can be resown immediately after digging. The yield is fairly heavy,

but not as great as that of some of the late-maturing varieties." (Wilson Popenoe.)

The seven strains of these "chauchas" are represented by S.P.I. Nos. 55456 to 55462.

Vicia michauxii (Fabaceae), 55547. **Vetch**. From Ariana near the city of Tunis, Tunis. Presented by F. Boeuf, chief, Botanical Service of Tunis. Introduced for trial as green manure and as a forage plant.

A creeping or climbing annual vetch, native to Syria, with very narrow leaflets, light-yellow flowers, and hairy pods about an inch long. (Adapted from Post, Flora of Syria, Palestine, and Sinai, p. 288.)

Notes on Behavior of Previous Introductions.

Amygdalus persica (Amygdalaceae), 43129. **Peach**. "Late Champion." From Auckland, New Zealand. "Although this tree was only planted out last year, it bloomed and matured three fruits in May of this year. The fruits are very pretty, being almost entirely red, and have a very agreeable flavor; they are freestone and very good to eat raw. I believe it will be a good variety for this region." (F. E. Mastin, Thorsby, Ala., June 1, 1922.)

Amygdalus persica nectarina (Amygdalaceae), 34685. **Quetta nectarine**. From Quetta, India. (Budded on *Amygdalus davidiana* stock.) "This has proved to be a large handsome smooth-skinned fruit. The tree has come through five winters without damage, and this season is full of fruit." (J. M. Bechtel, Hamburg, Iowa. August 18, 1922.)

Amygdalus persica nectarina (Amygdalaceae), 43144. **Nectarine**. "New Boy." From Auckland, New Zealand. "The tree has made remarkable growth, and this year it matured about two dozen of the finest nectarines I have ever seen or eaten. I cannot recommend it too highly. The first fruits were picked August 10." (Dr. F. M. Metcalf, Sacramento, Calif., August 16, 1922.)

Ficus carica (Moraceae), 8506. **Fig**. "Figue de Chios." From the Island of Chios, Greece. "One of the figs sent to me from the Plant Introduction Garden at Chico, Calif., is a very excellent variety. It is now ripening and I am much pleased with the quality of it." (F. I. Gibson, Savannah, Ga., August 15, 1922.)

Morus alba (Moraceae), 27048. **White mulberry.** From Orleans, France. "The French mulberry which you sent to me five years ago has developed magnificently and bears enormous crops of berries which we find delightful for fruit punches." (James F. Cooke, Philadelphia, Pa., June 14, 1922.)

Prunus armeniaca (Amygdalaceae), 17154. **Apricot.** From near Changli, Chihli, China. "A very upright vigorous tree which matures its fruits about July 10. The medium-sized fruits have a dark orange-yellow skin nearly covered with a bright-crimson blush. The small pit is not entirely free; the flesh is firm and keeps well after picking. I consider this superior to any other apricot known, except for size of fruit." (H. E. Harrison, East White Bluffs, Wash., July 17, 1922.)

Prunus tomentosa (Amygdalaceae), 38856. **Cherry.** From Peking, China. "We consider this a very fine cherry; the bushes are loaded with excellent fruit, which we use for making sauce and jelly." (Harlow Rockhill, Conrad, Iowa, July 1, 1922.)

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

Washington Scientific Staff.

David Fairchild, Agricultural Explorer in Charge.
Wilson Popenoe, Agricultural Explorer Acting in Charge.

P. H. Dorsett, Plant Introducer, Introduction Gardens; Peter Bisset, Plant Introducer, Experimenters' Service; B. T. Galloway, Consulting Specialist; J.F. Rock, Agricultural Explorer; H. C. Skeels, Botanist, Seed Collections and Herbarium; R. A. Young, Plant Introducer, Dasheens and Yams; C.C. Thomas and Donald C. Peattie, Assistant Plant Introducers; Paul Russell, Junior Plant Introducer; Patty Newbold, Junior Botanist; E.L. Crandall, Assistant, Photographic Records.

Plant Introduction Garden Superintendents and Propagators.

D. A Bisset, Superintendent, Bell, Md. (P. O. Glenn Dale, Md.), Edward Goucher, Propagator; J. E. Morrow, Superintendent, Chico, Calif., Henry Klopfer, Propagator; Edward Simmonds, Superintendent, Miami, Fla., Charles H. Steffani, Propagator; W. A. Patten, Superintendent, Brooksville, Fla.; Henry Juenemann, Superintendent, Bellingham, Wash.; E. J. Rankin, Assistant, Savannah, Ga.

Special Collaborators.

Thomas W. Brown, Cairo, Egypt; Robert H. Forbes, Cairo, Egypt; A. C. Hartless, London, England; E. W. D. Holway, Faribault, Minn.; Barbour Lathrop, Chicago, Ill.; Dr. H. L. Lyon, Honolulu, Hawaii; Henry Nehrling, Gotha, Fla.; Charles T. Simpson, Littleriver, Fla.; Dr. L. Trabut, Algiers, Algeria; Dr. William Trelease, Urbana, Ill.; E. H. Wilson, Jamaica Plain, Mass.